REMARKS/ARGUMENTS

The claims are amended to restrict the composition to novel combinations of THP and biopenetrant (restricted to a polymer or copolymer having a plurality of quarternary ammonium groups and the method claims to the use of combinations not previously described for use in water treatment.

The Examiner, once again, raises formal objection issues concerning selection of suitable biopenetrants. Applicants had earlier restricted the claims to certain classes of biopenetrants and specified amounts. This AMENDMENT further restricts the biopenetrant.

The language in the method claims preamble has been interpreted in a different manner than it should be in light of the specification. By "removing" microbial contamination is meant its destruction. To "prevent" is to prevent it from growing. To avoid the issue, the preamble of claim 18 (and New claim 22) is amended.

The Examiner continues the rejection noting that the "issue at hand is that no synergism was demonstrated." Reconsideration of the rejection in view of the following and of the additional evidence of synergy for the biopenetrant now being claimed.

The claims claim a synergy which arises when THP and non-surfactant biopenetrants are used in combination for killing microorganisms protected by a hydrophobic outer layer. Attached hereto is a DECLARATION showing synergistic effect of the claimed combination over the individual components of the combination. WSCP (see specification page 3, second paragraph) is essentially useless alone. THPS shows some effect. Together they show very high activity.

Previously surfactants were the only compounds known to promote the penetration of hydrophobic layers by THP. However, surfactants are generally of limited effectiveness unless sufficient quantities are used to cause unacceptable foaming problems in water treatment. The invention provides novel synergistic compositions which act as biopenetrants without causing foam problems, so permitting the amount of surfactant to be reduced or eliminated. It is this combination of properties on which applicants rely for synergism. Synergism is evidenced by the specification Example 1 and its associated Table (THPS/WSCP compared with prior-known formulations). This synergistic effect is shown already in the annexed DECLARATION as well.

The obviousness rejection is based on a combination of Davis et al. (GB 2 145 708) and a number of secondary references for their teaching of specific compounds.

Concerning the secondary references, although they teach the use of various compounds, none of the secondary references (LEGROS, GERHOLD, BARDOLIWALLA or WEST) relate to the use of a THP salt or THP condensate, alone or in a combination with a biopenetrant as now claimed, for the disinfection of water. None show or suggest the synergistic effect.

Davis (EP 0 491 391) the primary reference, relates to a method of making phosphono-carboxylic acids and to their use in water disinfection. It does not relate to THP salts or THP condensates.

The rejection states that Davis et al. teaches antimicrobial composition comprising THP and a biopenetrant such as dispersants.

However, Davis et al. refers to a synergy between two known biocides, THP and the thiocyanate biocides, such as TCMTB. This is not a teaching of a combination of THP and a biopenetrant. TCMTB is not a biopenetrant. Also, as shown in the DECLARATION, the biopenetrant does not require biocidal activity for there to

be an improved effect. The reference teaches only the synergy between two non-penetrant biocides, THP and TCMTB.

In view of the above, there is no teaching of the use of THP and a "biopenetrant" in Davis et al. Thus, it is not obvious to substitute compounds of the secondary references for compounds in Davis et al. Furthermore, it could not be expected from any combination of the art that a synergistic effect would occur.

Withdrawal of the rejection and allowance of the application are respectfully requested.

Respectfully submitted,

Frishauf, Holtz, Goodman
& Chick, P.C.
767 Third Ave., 25th Floor
New York, NY 10017-2023
Tel. No. (212) 319-4900
Fax No.: (212) 319-5101
MJC/ld

MARSHALL J. CHICK
Reg. No. 26,853

Enc. DECLARATION of Christopher Raymond JONES
dated September 22, 2003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
GROUP ART UNIT 1617

Applicant	:	C R Jones & R E Talbot
Assignee	:	Rhodia Consumer Specialties Limited
Serial No.	:	09/582, 152
Filed	:	December 21, 1998
For	:	Biocidal Compositions and Treatments
Examiner	:	San-ming Hui

DECLARATION

Honorable Commissioner of Patents and Trademarks,
Sir,

Christopher Raymond Jones declares as follows:

1. That he is the Christopher Raymond Jones who, together with Robert Eric Talbot, invented the subject matter of the present application.

2. That he has read the Office Action dated 09 April 2003 and GB 2 145 708, WO 91/04668, WO 96/14092, US 4 599 372, US 4 602 011 and EP 0 491 391 cited by the Examiner on the present application.

3. That Christopher Raymond Jones requested the evaluation of effect of three biocides on numbers of sessile general heterotrophic bacteria (GHB), acid producing general heterotrophic bacteria (AP-GHB) and sulphate reducing bacteria (SRB) by Commercial Microbiology Limited

using the NACE International Standard TMO 194-94 as a guideline in the design of said text.

4. That the data produced by Commercial Microbiology Limited (shown in Tables 1, 2 and 3) demonstrate that the most effective biocide after one hour against general heterotrophic bacteria was DP1099 which caused a 5 log reduction in bacterial numbers at 300 and 500 ppm. DP 1099 is a formulation of 50% active THPS blended with 2% WSCP.

After three hours, the data indicates that the most effective biocide overall, of all three tested, is DP1099 which caused a 6 log reduction in general heterotrophic bacteria numbers at all three concentrations, a 3 log reduction in sulphate reducing bacteria numbers at 100 ppm and a 5 log reduction at both 300 and 500 ppm.

That based on the current data Commercial Microbiology Limited states that the most effective biocide against GHB and SRB is DP1099.

That the other two biocides are DP1075 and DP1098 which are WSCP alone and 50 % active THPS alone, respectively.

That the tests were carried out using two mixed consortia, one GHB and one SRB, isolated from an offshore sea water injection system. The mixed cultures were inoculated into SRB culture medium (SRB/2 medium, Commercial Microbiology, Aberdeen), and sub-cultured twice. The cultures used in these tests were incubated at 30° C for four days for the GHB and seven days for the SRB cultures.

The tests were carried out in 500 ml sterile glass Pyrex bottles with butyl rubber stoppers and plastic screw tops with a hole drilled in the centre to enable the taking of samples using a needle and syringe.

One bottle of each culture was added to 500 ml of seawater and the coupons suspended in this with continuous stirring. This was incubated at 30° C for two weeks in order to allow the biofilms to form.

At the end of the two week period, seawater was dispensed into the 500 ml sterile bottles and the appropriate amount of chemical added to each bottle. This gave a total of ten bottles for the trial matrix – a control, with no added chemicals and bottles containing 100 ppm, 300 ppm and 500 ppm of each of the three chemicals.

The coupons were removed from the bottle and two coupons were placed in each bottle in the test matrix – one for each time point.

SRB and GHB cell numbers were then assayed by using triplicate Most Probable Number counts (MPNs) at two time points of 1 and 3 hours. At each time point, a coupon was removed from each test bottle and placed in a tube containing 10 ml Sea Water and Sand Diluent. The tube was sonicated briefly for 15 seconds in a sonic bath in order to detach the biofilm. Once the biofilms were removed from the coupons and resuspended, the diluent was used for triplicate MPNs counts.

The results from the tests are as follows:

Table A

Triplicate MPN counts after 1 hour		
Sample	GHB per cm^2 QW1522	SRB per cm^2 QW1521
Control	5.2×10^5	2.9×10^0
DP1075 100 ppm	2.9×10^4	2.9×10^0
DP1075 300 ppm	2.9×10^6	2.9×10^0

DP1075 500 ppm	8.6×10^5	2.9×10^0
DP1098 100 ppm	5.2×10^2	2.9×10^0
DP1098 300 ppm	2.9×10^2	2.9×10^0
DP1098 500 ppm	5.2×10^1	$<0.3 \times 10^0$
DP1099 100 ppm	2.9×10^1	2.9×10^0
DP1099 300 ppm	2.9×10^0	2.9×10^0
DP1099 500 ppm	2.9×10^0	2.9×10^0

Table B

Triplicate MPN counts after 3 hours		
Sample	GHB per cm^2 QW1522	SRB per cm^2 QW1521
Control	2.9×10^6	5.2×10^6
DP1075 100 ppm	1.1×10^5	1.1×10^6
DP1075 300 ppm	8.6×10^5	1.3×10^7
DP1075 500 ppm	5.2×10^5	5.2×10^6
DP1098 100 ppm	2.9×10^1	1.1×10^3
DP1098 300 ppm	4.6×10^0	1.1×10^2
DP1098 500 ppm	2.9×10^0	5.2×10^1
DP1099 100 ppm	2.9×10^0	1.7×10^3
DP1099 300 ppm	2.9×10^0	1.6×10^1
DP1099 500 ppm	2.9×10^0	0.8×10^1

From the tables it can be seen that DP1075 (WSCP alone) at 100 ppm, 300 ppm and 500 ppm has a negligible effect on the amount of bacteria present in the system.

DP1098 (THPS alone) shows a reduction in the level of bacteria especially GHB at all concentrations.

DP1099 shows a substantial decrease of bacteria at 300 and 500 ppm.

Results for SRB after 1 hour are not available as the bacteria did not survive after such a short period of time during the experiment. More accurate results were obtained at a 3 hour time point shown in Table B.

In Table B DP1099 (the blend of THPS and WSCP claimed in the present application) shows a synergistic effect over WSCP alone and THPS alone against general heterotrophic bacteria. When sulphate reducing bacteria (SRB) are used a more marked effect can be seen when using DP1099 at all concentrations when compared with WSCP (DP1075) alone and THPS (DP1098) alone at all concentrations.

The results clearly show that THPS and WSCP when blended together produce a marked synergistic effect as a biocide when compared to THPS and WSCP alone.

That Christopher Raymond Jones asserts previous arguments submitted in the earlier declaration.

The undersigned herby declares that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made in the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of the Title 18 of the United States Code, and that such wilful false statements may jeopardise the validity of the application or any patent issued thereon.

Signed ..... Chris Jones .....

Christopher Raymond Jones Date 22nd September 2003.